APPENDIX 8.1H

Cumulative Impacts Analysis Protocol

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Potential cumulative air quality impacts that might be expected to occur resulting from WCEP and other reasonably foreseeable projects are both regional and localized in nature. These cumulative impacts will be evaluated as follows.

Regional Impacts

Regional air quality impacts are possible for pollutants such as ozone, which involve chemical and photochemical reactions in the atmosphere, downwind of an emission source that can take hours to occur. WCEP will provide emissions offsets (mitigation) for NO_x at the ratios specified in the SCAQMD regulations. Additional mitigation for other pollutants may be required by the CEC.

Although the relative importance of VOC and NO_x emissions in ozone formation differs from region to region, and from day to day, most air pollution control plans in California require roughly equivalent controls (on a ton per year basis) for these two pollutants. The change in emissions of the sum of these pollutants, equally weighted, will be used to provide a reasonable estimate of the impact of WCEP on ozone levels. The net change in emissions of ozone precursors from WCEP will be compared with emissions from all sources within Los Angeles County (Table 8.1H-1), and within the South Coast Air Basin (Table 8.1H-2) as a whole.

TABLE 8.1H-1
Estimated Los Angeles County Emissions Inventory for 2004 (tons/day)

Source Category	TOG	ROG	CO	NO_x	SO_x	PM	PM_{10}
Total Stationary Sources	333.89	95.32	69.37	49.18	23.72	26.24	14.97
Total Area Sources	133.1	107.4	84.4	19.8	0.24	270.3	139.3
Total Mobile Sources	296.4	271.4	2458.9	559.96	29.42	24.1	23.6
Total Natural Sources	46.77	40.55	64.99	1.94	0.6	9.37	6.56
County Total	810.2	514.7	2677.6	630.9	54	330	184.4

Source: CARB

TABLE 8.1H-2
Estimated South Coast Air Basin Emissions Inventory for 2004 (tons/day)

Source Category	TOG	ROG	CO	NO_x	SO_x	PM	PM_{10}
Total Stationary Sources	480.7	150.9	73.1	71.8	24.9	19.8	15.5
Total Area Sources	334.6	173.8	156.1	31.8	0.4	473.5	235.1
Total Mobile Sources	522.0	479.6	4217.9	941.3	37.6	40.7	39.9
Total Natural Sources	5.5	3.1	89.0	4.1	-	18.2	17.5
Basin Total	1342.8	807.4	4536.0	1048.9	62.9	552.1	307.9

Source: CARB

Air quality impacts of fine particulate, or PM_{10}, have the potential to be either regional or localized in nature. On a regional basis, an analysis similar to that presented above for ozone will be performed, looking at the three pollutants that can form PM_{10} in the atmosphere, i.e., VOC, SO_x, and NO_x as well as at directly emitted particulate matter. SCAQMD regulations require offsets to be provided for PM_{10} emissions from the project, as facility emissions will exceed the Rule 1304 offset threshold of 4 tons per year. In addition, full mitigation of PM_{10} will likely be required by the CEC.

As in the case of ozone precursors, emissions of PM_{10} precursors are expected to have approximately equivalent ambient impacts in forming PM_{10}, per ton of emissions on a regional basis. Table 8.1H-3 provides the comparison of emissions of the criteria pollutants from WCEP with emissions from all sources within Los Angeles County, and within the South Coast Air Basin as a whole.

TABLE 8.1H-3
Comparison of WCEP Project Emissions to Estimated Inventory for 2000

Category	TOG	ROG*	CO	NO_x	SO_x	PM	PM_{10}
WCEP Emissions (tons/yr)	NA	31.0	175.0	105.8	7.5	73.7	73.7
WCEP Emissions (tons/day)	NA	0.154	0.89	0.539	0.038	0.366	0.366
County Total (tons/day)	810.2	514.7	2677.6	630.9	54	330	184.4
Air Basin Total (tons/day)	1342.8	807.4	4536.0	1048.9	62.9	552.1	307.9
WCEP % of County Total	NA	0.02	0.03	0.09	0.07	0.11	0.20
WCEP % of Air Basin Total	NA	0.02	0.02	0.05	0.06	0.06	0.12

* WCEP VOC emissions compared to inventory ROG emissions.

Localized Impacts

Localized impacts from WCEP could result from emissions of carbon monoxide, oxides of nitrogen, sulfur oxides, and directly emitted PM_{10}. A dispersion modeling analysis of potential cumulative air quality impacts will be performed for all four of these pollutants.

The potential impact area where cumulative localized air quality impacts could occur has been identified by CEC staff as an area with a radius of 8 miles around the WCEP plant site. To evaluate the potential cumulative localized impacts of WCEP in conjunction with the impacts of existing facilities and facilities not yet in operation but are currently in process as an operating permit or licensing application , a dispersion modeling will be conducted if warranted. Based on the results of the air quality modeling analyses described in AFC Section 8.1 (Air Quality), "significant" air quality impacts, as that term is defined in federal air quality modeling guidelines, have not been determined for the WCEP project. If the project's impacts do not exceed the significance levels, no cumulative impacts would be expected to occur, and no further analysis would be required. Should data be developed which shows that the WCEP project emissions would result in "significant" impacts, then all projects identified within a search area with a radius of 8 miles beyond the project's impact area will be used for the cumulative impacts analysis. Within this search area, three categories of projects or sources will be evaluated for inclusion in the analysis:

- Projects that are existing and have been in operation prior to 1-1-2005 (emissions are included in the overall background air quality assessment).
- Projects for which air pollution permits to construct have been issued and that began operation after 1-1-2005.
- Projects for which air pollution permits to construct have been issued after 1-1-2005, but that are not yet in operation.

Projects that are existing and have been in operation prior to 1-1-2005 will be reflected in the ambient air quality data that has been used to represent background concentrations; consequently, no further analysis of the emissions from this category of facilities will be performed. The cumulative impacts analysis adds the modeled impacts of selected facilities to the maximum measured background air quality levels, thus ensuring that these existing projects are taken into account. All other projects will be identified by a request to the SCAQMD for an applicable source or facility listing.

The WCEP project is not expected to trigger PSD review. Notwithstanding the foregoing, a list of sources within the project region meeting the above noted criteria has been requested from the SCAQMD staff.

Given the potentially wide geographic area over which the dispersion modeling analysis may be performed, the ISCST3 model will be used to evaluate cumulative localized air quality impacts. The detailed modeling procedures, ISCST3 options, and meteorological data used in the cumulative impacts dispersion analysis will be the same as those described in the AFC Air Quality section. The receptor grid spacing will be determined in consultation with the SCAQMD for the area in which the detailed modeling analysis is to be performed.

Cumulative Impacts Dispersion Modeling

The dispersion modeling analysis of cumulative localized air quality impacts for the proposed project will be evaluated in combination with other reasonably foreseeable projects and air quality levels attributable to existing emission sources, and the impacts will be compared to state or federal air quality standards for significant impact. As discussed

above, the highest second-highest modeled concentrations will be used to demonstrate compliance with standards based on short-term averaging periods (24 hours or less).

Supporting information used in the analysis will include the following:

- 2004 estimated emissions inventory for Los Angeles County (Table 8.1H-1) and for the South Coast Area Air Basin (Table 8.1H-2);
- List of projects and their respective coordinate locations resulting from the screening analysis of permit files by the SCAQMD;
- Stack parameters for sources included in the cumulative air quality impacts dispersion modeling analysis; and
- Output files for the dispersion modeling analysis.

Table 8.1H-4 SCAQMD Emissions Trends and Forecasts

Table 8.1H-5 SCAQMD Natural Source Emissions Inventory Data

Table 8.1H-4 SCAQMD Emissions Trends and Forecasts

South Coast Air Basin

County Emission Trends and Forecasts

	NO_x Emissions (tons/day, annual average)										ROG Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
Los Angeles	1234	1123	1171	1027	849	736	581	455	360	311	1953	1600	1538	1141	805	608	420	349	322	309
Orange	270	279	312	266	222	195	162	129	104	91	484	465	471	350	254	198	141	121	114	111
Riverside	88	99	111	151	133	137	118	94	69	55	125	125	134	133	110	93	72	64	63	64
San Bernardino	130	140	146	145	127	128	108	85	67	57	162	174	181	150	119	100	77	68	65	65
Air Basin Total	1723	1641	1741	1588	1331	1195	970	763	600	515	2725	2364	2324	1775	1288	998	710	602	563	549

	Directly Emitted PM_{10} Emissions (tons/day, annual average)										CO Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
Los Angeles	139	136	151	185	163	144	142	143	145	147	11684	9018	8811	6609	4718	3406	2364	1793	1446	1223
Orange	32	38	44	58	54	54	54	55	55	56	2622	2407	2464	1922	1454	1048	770	612	514	457
Riverside	23	28	32	48	49	49	52	55	58	61	775	789	847	927	724	558	422	336	283	251
San Bernardino	43	44	47	53	59	46	48	50	51	53	1074	1169	1018	863	678	521	397	322	276	253
Air Basin Total	236	247	274	343	325	293	296	303	309	317	16154	13382	13140	10322	7574	5533	3953	3062	2519	2184

	Directly Emitted $PM_{2.5}$ Emissions (tons/day, annual average)									
County	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
Los Angeles	80	70	72	76	62	59	60	59	60	60
Orange	16	17	19	21	18	19	19	19	19	19
Riverside	9	10	11	15	15	16	17	18	19	20
San Bernardino	20	18	16	17	18	17	18	18	19	20
Air Basin Total	124	116	117	129	112	111	113	114	116	119

A portion of Los Angeles County lies within the Mojave Desert Air Basin. Portions of Riverside County lie within the Mojave Desert and Salton Sea Air Basins. A portion of San Bernardino County Lies within the Mojave Desert Air Basin.

Table 8.1H-5 SCAQMD Natural Source Emissions Inventory Data

South Coast Air Basin

Natural Source Emissions (tons/day, annual average)

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**86**	**164**	**5**	**2**	**17**	**14**	**6**
Biogenic Sources	76	0	0	0	0	0	3
Geogenic Sources	0	0	0	0	0	0	1
Wildfires	11	164	5	2	17	14	2

Table E-78

Los Angeles County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**34**	**65**	**2**	**1**	**7**	**6**	**2**
Biogenic Sources	30	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	1
Wildfires	4	65	2	1	7	6	1

Table E-79 A portion of Los Angeles County lies within the Mojave Desert Air Basin.

Orange County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**9**	**2**	**0**	**0**	**0**	**0**	**0**
Biogenic Sources	9	0	0	0	0	0	0
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	0	2	0	0	0	0	0

Table E-80

Riverside County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**24**	**38**	**1**	**0**	**4**	**3**	**1**
Biogenic Sources	22	0	0	0	0	0	1
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	2	38	1	0	4	3	0

Table E-81 Portions of Riverside County lie within the Mojave Desert and Salton Sea Air Basins.

San Bernardino County

Category	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$	NH_3
Natural Sources Total	**19**	**59**	**2**	**1**	**6**	**5**	**3**
Biogenic Sources	15	0	0	0	0	0	2
Geogenic Sources	0	0	0	0	0	0	0
Wildfires	4	59	2	1	6	5	1

Table E-82 A portion of San Bernardino County lies within the Mojave Desert Air Basin.